

**Before The  
FEDERAL COMMUNICATIONS COMMISSION**

**Washington, D.C.**

In the Matter of	)	
	)	
Implementation of Section 255 of the	)	
Telecommunications Act of 1996	)	
	)	WT Docket No. 96-198
Access to Telecommunications Services,	)	
Telecommunications Equipment, and	)	
Customer Premises Equipment	)	
By Persons with Disabilities	)	

**COMMENTS OF MOTOROLA, INC.**

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## **EXECUTIVE SUMMARY**

“Motorola is committed to providing quality products and services to all of our customers – including our customers with disabilities. We want to take a leadership role in the creative development of new products which will meet the needs of people with disabilities, and at the same time make our products easier to use by everyone.”<sup>1</sup> Motorola is committed to creating a product for every person, one that fits the needs of the consumer and is the consumer’s product of choice in the marketplace. As a company, we are driven by the opportunity and challenge of meeting the needs of our customers in creative ways with quality products and services.

In implementing Section 255, the Federal Communications Commission (“FCC”) should focus on the overarching goal of Congress: to increase the number of Americans with disabilities who can use telecommunications and to improve the ease of access for those persons. Accessible customer premises equipment (“CPE”) is a means for achieving this goal, not the end in itself. In order to achieve this overarching goal, the FCC should adopt a regime that aims to provide a product for every person, not every product for every person. This will result in better products for all consumers – persons with and without disabilities.

The FCC should capitalize upon and encourage the current trend towards product differentiation in CPE manufacturing as the best way to ensure that CPE provides effective and efficient access to telecommunications for persons with a variety of functional limitations. At pages 11 to 15 of these comments, Motorola discusses specific examples of how inclusion of access features across a product line (pagers) results in CPE products that provide meaningful – rather than superficial levels of access – to telecommunications for persons with different

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<sup>1</sup> Robert Growney, Chief Operating Officer of Motorola.

functional limitations, and how the FCC’s proposed rules could stifle the development of new products that increase accessibility.

The FCC proposes to define “accessible” CPE as “universally accessible” to everyone, and to apply that standard to every individual CPE product. Such an approach hinders, rather than promotes, the product differentiation that is essential to achieving the goals of Section 255. It posits universal or “full” accessibility as the “ideal” and requires manufacturers to justify for each and every product (in defending against a series of complaints that may allege inaccessibility due to a variety of different functional limitations) what cannot be done: “universal accessibility.”

The extraordinary burden of complying with the FCC’s proposal and the waste of resources that must be dedicated to reaching this foregone conclusion might be justified if universally accessible CPE were an “ideal” consistent with Section 255’s overarching goal of access to telecommunications. It is not. We believe that is an inappropriate reading of the law that will hinder, rather than encourage, the market introduction of the full range of accessible product that would meet the needs of customers. As Motorola’s examples in this submission demonstrate, “universal accessibility” is far less than an “ideal” strategy for achieving the goal of Section 255 and for providing CPE that consumers – persons with and without disabilities – actually want. The nature of the access problem (different functional limitations can generate conflicting access needs), the realities of product design, and the legal limitation (what is “readily achievable”) on manufacturers’ obligation to provide a remedy, all compel the conclusion that product differentiation, encouraged through a product-line rule for compliance, is the best strategy for increasing access to telecommunications.

Similarly, as currently drafted, the FCC’s accessibility criteria require manufacturers to evaluate the accessibility of product inputs and outputs to a particular functional limitation independently, which can potentially generate unintended, nonproductive requirements, for example, to make product controls accessible to a person who is blind because it is “readily achievable,” even though it is not “readily achievable” to make the outputs on the same product accessible to persons who are blind. These examples demonstrate that the FCC’s proposal ignores the goal of providing meaningful access to telecommunications services for people with a range of functional limitations.

Motorola agrees with the FCC that the definition of “readily achievable,” which defines the scope of manufacturers’ obligations under Section 255, should be adapted to the telecommunications context. In order to formulate regulations that are appropriate to the process that the FCC intends to regulate – manufacturing – the FCC would benefit from a greater appreciation and understanding of the many inter-related factors and difficult trade-offs that drive CPE product design and development. To that end, Motorola has developed a matrix for a typical product, discussed at pages 27 to 32, which identifies the impact of typical access strategies that could satisfy the FCC’s proposed 18 point accessibility “checklist” upon the “product drivers” (such as cost, memory, size, battery (power drain) and features) that drive the product development process, intended to satisfy the needs of a particular market segment. “Budgets” are set for each of the “product drivers” to ensure that the product goals are met. These budgets inter-relate in complicated ways. For example, many features require memory and power, which in turn have an impact on cost and size. The matrix demonstrates that in virtually every instance, inclusion of an access feature would implicate not just one, but many product drivers.

Consequently, the matrix establishes two points. First, the extraordinary burden of compliance that will be imposed upon manufacturers if the FCC adheres to its proposal to require manufacturers to assess what is “readily achievable” for each of the 18 items on the accessibility “checklist” for each and every product. Second, the complexities that must be taken into account when making a determination of what is “readily achievable” – not just whether including a particular access feature would fundamentally alter a product, for example, but also whether any or all of the other product modifications that would be required to accommodate that access feature would result in a fundamental alteration.

With respect to the specific factors that define what is “readily achievable,” Motorola proposes three factors that are derived from the considerations suggested by the FCC. First, as the FCC has proposed, **technical feasibility** should be expressly recognized as a factor. Second, in keeping with its recognition that every product cannot accommodate every disability at the same time, the FCC should modify its proposal to take into account the **cumulative impact** of removing barriers to telecommunications through inclusion of access features, which would be consistent with the approach taken by the Department of Justice (“DOJ”) in the context of the Americans with Disabilities Act (“ADA”). Third, the FCC should recognize, as DOJ did in the ADA context, that the “readily achievable” standard does not require **fundamental alteration** of CPE products so that they are less desirable (in terms of form, functionality and cost) for the target market that they were designed to serve.

As the FCC recognizes, the nature of the accessibility problem, the realities of the product design, and the limitations of the “readily achievable” standard dictate that manufacturers developing CPE products in a highly competitive market can provide greater accessibility if they have discretion in incorporating access features across lines of similar, comparably priced

products. Rather than hold manufacturers to an impossible standard of “universal accessibility” that will not result in meaningful access solutions for persons with disabilities, the FCC should adopt a product-line approach to compliance as the rule, rather than the exception.

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**I. INTRODUCTION**

Motorola is committed to providing quality products and services to all of our customers – including our customers with disabilities. We want to take a leadership role in the creative development of new products which will meet the needs of people with disabilities, and at the same time make our products easier to use by everyone.

Robert Growney  
Chief Operating Officer<sup>2</sup>

Motorola opens its comments in this proceeding with a statement of our commitment to provide products and services to all our customers because we believe it is important for the FCC, the Congress, service providers and the public who use our products to know that we embrace the spirit and intent of Section 255.

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<sup>2</sup> This statement introduces a training video presently in production for Motorola employees which will address how Motorola can better serve the needs of people first, specifically people who have disabilities or functional limitations.

*Total Customer Satisfaction* is Motorola's fundamental objective. Guided by fundamental principals of respect for the individual and uncompromising integrity, the strategies we employ to achieve this objective define Motorola. Over the years, Motorola has initiated a number of critical key initiatives, including Six Sigma Quality for our products, Total Cycle Time Reduction, and forty hours of training for every Motorola associate, every year. These initiatives, strategies really, focus Motorola on the basics of customer satisfaction, in an environment of constant change in products, services and technologies. Part of the challenge which our industry faces today is meeting the needs of more consumers who have an increased desire for product choices, more access to telecommunications services and greater ease of use.

To meet the needs of persons with disabilities, Motorola established the Motorola Telecommunications Access Council ("MTAC") in late 1996. MTAC is comprised of representatives of the Motorola businesses which have products and services for which greater access and usability is desired. It includes all of the businesses which we believe are impacted by Section 255 of the Act, and the customer services operations as well as corporate functions which have synergistic expertise, such as research, training, human resources, quality and product safety. Working together, we have identified internal and external strategies to increase accessibility and usability of Motorola products and services.

In cooperation with consumers who have disabilities and who assisted in course development, Motorola University has developed an introductory training course (with additional courses to follow) for Motorola employees. The purpose of the course is to help associates better understand and meet the needs of customers with functional limitations and to develop an understanding of how easier to use products are good for all consumers. Motorola expects

associates in engineering, marketing, customer service, research and many other classifications to take this training in the next year.

Motorola also has increased the involvement of customers with disabilities in product trials and research as an important strategy for understanding how our products can be made more usable. In the last year Motorola introduced its narrowband PCS product, the *Portable Answering Machine* (“talking pager”). Working with a carrier, Motorola provided a group of 15 consumers who are blind or have visual impairments with the *Portable Answering Machine* for three months. During the trial, the consumers kept notes to suggest product features that could be made more usable in the next generation of the product. In addition, at the American Council of the Blind and the American Foundation for the Blind Leadership Institute in Washington, DC this spring, Motorola and ConXus (the service provider for this product in the Washington area) provided *Pocketalk*™ talking pagers to anyone attending the conference for the duration of the conference. Instructions were available in Braille, large print or audio cassette, as well as via an 1+800 number and on-site assistance. After the Leadership Institute, we conducted phone interviews with users. The valuable feedback received from participants will help us in making our next generation of products easier to use.

In the area of customer service, Motorola provides cellular and PCS user manuals upon request in Braille, large print or audio cassette. *Portable Answering Machine* (*Pocketalk*™ or *VoiceNow*™) manuals are also available in alternative format for persons with visual impairments. All of Motorola’s over 50 call centers in the US will be equipped, and call center associates trained, in the use of TTYs by the beginning of the third quarter of 1998. The TTYs will have dedicated telephone lines.

Motorola has also committed to research initiatives for people with functional limitations. Motorola now provides a Hearing Aid Compatible analog cellular telephone and is beta testing a digital PCS product for use with hearing aids in the acoustic mode. The digital PCS products utilize a battery with a built-in antenna, designed with the user of a hearing aid in mind. The “antenna battery” design minimizes interface to the hearing aid, and fits any of Motorola flip phones as well as other models. In addition, we have a human factors research effort underway in cooperation with several organizations which advocate for and serve persons with disabilities. Motorola human factors scientists recently attended the Self Help for Hard of Hearing convention and will attend the National Association of the Deaf and American Council of the Blind conventions to gather data from members on how Motorola products are used today and could be made more usable in the future.

Motorola is committed to creating a product for every person, one that fits the needs of the consumer and is the consumer’s product of choice in the marketplace. This is a team effort involving Motorola, service providers and consumers. The initiative is complex and comprehensive. As a company, we are driven by the opportunity and challenge of meeting the needs of our customers in creative ways with quality products and services.

Motorola’s comments on select issues raised by this NPRM reflect an underlying theme: Results-oriented incentives, combined with the freedom to attain such results, drive competitive innovation in the telecommunications market, thereby increasing access to telecommunications products and services for persons with disabilities.<sup>3</sup> Detailed product-by-

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<sup>3</sup> In addition to these comments, Motorola endorses the comments submitted by the Telecommunications Industry Association (“TIA”) in response to this NPRM.

product process regulation, rather than overall goal regulation, will discourage the innovation needed to achieve Congress' overarching goal of increasing the number of Americans with disabilities who can access telecommunications and the ease of access for those persons.

Motorola's comments fall into four broad categories.

Section II of these comments addresses the issue that is of paramount importance to Motorola and other manufacturers: the need for the FCC to apply Section 255 accessibility requirements across lines or families of products, rather than to each individual piece of telecommunications equipment.<sup>4</sup> The FCC's NPRM is unclear on this key point. The FCC proposes that accessibility must be considered for each product, but that manufacturers can rely upon a product family based approach to compliance if the approach results in an overall increase in accessibility.<sup>5</sup> Section II of these comments demonstrates that only product differentiation will ultimately promote meaningful access for a range of disabilities, differentiation that is inconsistent with the individual product-by-product paradigm tentatively proposed by the FCC.

Section III endorses the FCC's general proposal to adapt the definition of "readily achievable," which defines the scope of manufacturers' obligations under Section 255, to the telecommunications context. With respect to the specific factors that should be considered in determining what is "readily achievable," Motorola suggests some modification to the FCC's proposal based upon ADA precedent.

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<sup>4</sup> For the purpose of these comments, Motorola refers to telecommunications equipment and CPE interchangeably to refer to equipment that is subject to Section 255, unless otherwise indicated.

<sup>5</sup> See NPRM at ¶¶ 169-170.

Section IV offers alternate definitions of key statutory terms, including “accessible” and “compatible,” which will promote increased access for persons with disabilities.

Section V advocates a fair and efficient complaint process. Specifically, Motorola advocates a standing requirement for filing a complaint, as well as measures to insure the confidentiality of proprietary information submitted by manufacturers in the complaint process.

## **II. A PRODUCT-LINE APPROACH TO COMPLIANCE SHOULD BE THE RULE, NOT THE EXCEPTION, BECAUSE IT WILL RESULT IN MORE MEANINGFUL ACCESS SOLUTIONS FOR PERSONS WITH DISABILITIES.**

From Motorola’s perspective, the most important decision that the FCC will make in response to this NPRM is whether Section 255 applies to each piece of telecommunications equipment, or to lines or families of products with similar features, functions, and price. Unfortunately, the FCC’s proposed rules do not take into account, “up front,” the need for manufacturers to exercise discretion in incorporating access features across products in a product line.

### **A. The FCC’s Proposal To Require A Product-By-Product Assessment Of Whether It Is “Readily Achievable” To Provide Access Is Inconsistent With The Practical Reality That No Single Piece Of CPE Can Be Accessible To Everyone.**

As the FCC recognizes, “the **ideal of full accessibility** is generally limited by feasibility, expense, or practicality,”<sup>6</sup> in other words, by what is “readily achievable.”<sup>7</sup> The “ideal” that the FCC apparently has in mind is a piece of CPE that is accessible to all persons, with all

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<sup>6</sup> NPRM ¶ 170 (emphasis added).

<sup>7</sup> Feasibility, expense, and practicality are the three components of the “readily achievable” definition proposed by the FCC. NPRM ¶ 100.

disabilities – in other words – a universally accessible product. In fact, the FCC’s proposed definition of “accessibility,” which would require that product inputs, outputs, displays, mechanical and control functions be usable by persons with a wide range of functional limitations or combinations of functional limitations,<sup>8</sup> is consistent with the model of a universally accessible product.<sup>9</sup> While the model of a universally accessible product may be appealing in the abstract, this “ideal” does not provide meaningful guidance as to how Section 255 should be implemented and applied to the realities of manufacturing or of purchasing CPE in a manner useful to consumers with disabilities. In practice, adoption of a regime in which manufacturers are required to make every product accessible to every person, or demonstrate why it is not “readily achievable” to do so, requires manufacturers to defend their inability to achieve the impossible – a universally accessible product. Moreover, the regulatory scheme proposed by the FCC will in

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<sup>8</sup> Architectural and Transportation Barriers Compliance Board (“Access Board”) Guidelines §§ 1193.41, 1193.43. These functional limitations relate to speech, vision, hearing, movement and processing of information.

The FCC has proposed to adopt the definition of “accessible” developed by the “Access Board.” NPRM ¶ 75. The Access Board’s definition of “accessible,” 36 C.F.R. § 1193.3, consists primarily of requirements related to the accessibility of product inputs and outputs to a variety of functional limitations. 36 C.F.R. § 1193.41 (establishing nine criteria for product input, control, and mechanical functions); § 1193.43 (establishing nine criteria for product output, display and control functions). In addition, the Access Board’s definition includes requirements related to “pass through” of codes and information “necessary to provide telecommunications in an accessible format,” 36 C.F.R. § 1193.37, and a prohibition against changes to products that would decrease “the net accessibility” of CPE, unless the product is discontinued. 36 C.F.R. § 1193.39. For convenience, Motorola refers to the elements of the definition of “accessible” as the “18 point checklist,” even though the definition in fact establishes more than 18 requirements to achieve accessibility.

<sup>9</sup> Under the proposed definition of accessibility, each of the eighteen items on the “checklist” is mandatory, so that a manufacturer must perform an independent “readily achievable” calculus for each item on the checklist. See NPRM ¶ 75 (requesting comment on this proposal).



some cases lead to unintended, nonproductive results, demonstrating why a product-line approach to compliance is the only realistic way to implement Section 255.

Throughout the Section 255 implementation process, manufacturers, persons with disabilities, the Access Board, and the FCC have acknowledged that Section 255 does not require manufacturers to make universally accessible products. This recognition is based upon two principles.

First, manufacturers' ability to make a universally accessible product is limited by the nature of the accessibility problem itself. As the TAAC acknowledged, "no single interface design will accommodate all disabilities."<sup>10</sup> It is not possible now, and probably not ever, to manufacture a piece of CPE that is accessible to every person with a disability. Different functional limitations generate different, often conflicting accessibility needs,<sup>11</sup> and even within a single disability, access needs can vary widely.

Second, Section 255 does not obligate manufacturers to make universally accessible products as a matter of law. As the FCC recognizes in the NPRM, universal access generally cannot be accomplished "without much difficulty or expense," and therefore, is neither "readily achievable" nor required by Section 255.<sup>12</sup> Universal accessibility is not "readily achievable" within the meaning of Section 255, because it is not technically feasible, would fundamentally alter the nature of the equipment, or is simply too expensive.

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<sup>10</sup> NPRM ¶ 15 (citing TAAC Final Report § 5.2.1 at 20).

<sup>11</sup> For example, multiple selectable access features would likely run afoul of the requirement that the product be accessible to persons with cognitive disabilities. See Access Board's Guidelines 1193.41(i).

<sup>12</sup> NPRM ¶ 100; 42 U.S.C. § 12181(9) (definition of "readily achievable").

Because no single CPE product can be accessible to everyone, both the TAAC and the FCC have recognized that manufacturers will need to exercise discretion in incorporating access features that accommodate different functional limitations. As the TAAC recognized, “because no single interface design will accommodate all disabilities, companies **must use discretion in choosing** among accessibility features.”<sup>13</sup> Similarly, the FCC acknowledges that:

**In the marketplace, providers must decide what features to include and what features to omit. We believe it is reasonable for an informed product development decision to take into account the accessibility features of other functionally similar products the provider offers,** provided it can be demonstrated that such a “product line” analysis increases the overall accessibility of the provider’s offerings.<sup>14</sup>

Motorola commends the FCC for recognizing that, in at least some circumstances, a manufacturer should be permitted to take a “product-line” approach to compliance. Motorola believes, however, that the product-line approach should be the rule, rather than the exception. In marketplace terms, the FCC should embrace the policy of “a product for every person, not every product for every person.”

Instead of placing primary emphasis on a “similar product” defense, the FCC should recognize the legitimacy of a product-line approach to compliance “up front” in defining the scope of manufacturers’ obligations under Section 255. Rather than rely upon an uncertain defense at the “back end,” manufacturers designing future products will likely rely on the more certain defense that it was not “readily achievable” to make an individual product accessible to

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<sup>13</sup> NPRM ¶ 15 (citing TAAC Final Report § 5.2.1 at 20) (emphasis added).

<sup>14</sup> NPRM ¶ 170 (emphasis added).

some or all functional limitations.<sup>15</sup> Because it is impossible to make a universally accessible product, the “readily achievable” defense will have some merit with respect to every product. By allowing manufacturers to look across the range of their similar products as they do their design on the “front-end,” the FCC will permit flexibility and product differentiation that is critical if the goal of increased accessibility is to be achieved. The product-line approach reflects the limitations of the legal obligation imposed by Section 255 and practical realities. Moreover, use of the attainable product-line approach, rather than an unattainable ideal, will maximize the resources that are dedicated to accessible product design and development, as opposed to documentation and defending complaints.

**B. The FCC Should Adopt A Product-Line Approach To Compliance, Which Is Consistent With The Reality That No Product Can Be Accessible To Every Person – A Reality That Requires Manufacturers To Exercise Discretion In Incorporating Access Features Across Product Lines.**

**1. The FCC should implement Section 255 to promote product differentiation, which is the key to enhanced accessibility.**

If the FCC were to adopt an approach to Section 255 that required each manufacturer to provide a range of functionally similar, comparably priced products that are accessible, the FCC would create incentives for product differentiation, which is critical to increased accessibility for persons with disabilities.

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<sup>15</sup> A manufacturer might be deterred from adopting a product-line approach, for example, because of the potential disruption of its business that might result if the FCC were to determine that the manufacturer failed to provide the “overall increase in accessibility” required to justify product line compliance under the FCC’s approach. What would the FCC impose as a remedy? Would the manufacturer subsequently be required to demonstrate product-by-product compliance?

The individual product-by-product paradigm proposed by the FCC as the presumptive method for complying with Section 255 fails to recognize that certain kinds of products and technologies are inherently better-suited to meeting the needs of people with certain functional limitations than other products and technologies. For this reason, it will often be a waste of resources to require a manufacturer to incorporate features that accommodate different functional limitations into a single product or to document why the manufacturer has determined that it is not “readily achievable” to do so. A few concrete examples taken from Motorola’s product line demonstrate this point.

Motorola’s *Portable Answering Machine* product is a pager with voice output that functions much like a mobile voice mailbox.<sup>16</sup> This product has been recognized as being helpful to persons who are blind or who have low vision because it permits them to receive pages and to review messages without any need to read text. Instead of appearing on a pager screen, the messages received are played audibly. In addition, the *Portable Answering Machine* product contains many audio cues and prompts that are quite useful to people with low or no vision.

Even though the addition of the *Portable Answering Machine* to the line of pagers substantially increased the usability of pagers to persons with one kind of disability, under the FCC’s proposed product-by-product regulations, Motorola’s incentives to create such a product could be reduced. Under a product-by-product or universal access approach, Motorola would have been: (a) required, as part of its design process, to determine whether it was “readily achievable” to make the product accessible to the other functional limitations identified on the 18

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<sup>16</sup> The *Portable Answering Machine* is currently marketed by Page Net under the name *VoiceNow*™ and by ConXus under the name *Pocketalk*™. A product information sheet for the *Portable Answering Machine* is attached as Appendix A to these comments.

point accessibility “checklist;” and (b) vulnerable to a complaints by persons with other disabilities alleging that the product is not accessible to them.

For example, a person who is completely deaf could file a complaint about the *Portable Answering Machine* product, even though a large number of other Motorola pagers, which typically include message display screens and vibrating alert functions, are ideal for a person who is deaf and wishes to receive text messages. In defending against such a complaint, Motorola might need to demonstrate why it was not “readily achievable” to make the *Portable Answering Machine* product usable to persons without hearing without reference to the access features included in these other pagers. Moreover, the issues that would likely be raised by a “readily achievable” defense for the *Portable Answering Machine* product would be complex. To make the *Portable Answering Machine* accessible to people who are deaf, while, at the same time retaining the features that make it accessible to people who are blind or visually-impaired, Motorola would, at a minimum, need to incorporate a voice to text software, a visual display, as well as visual or vibrating counterparts for all of the audio features of the product into the *Portable Answering Machine* product. These additions would have made the *Portable Answering Machine* too expensive and complex to build, and it might never have been produced, resulting in less access to paging technology for people who are blind.

Focusing only on the voice to text feature for a moment, and assuming for the sake of argument that this single accessibility feature had to be incorporated into the CPE pager,<sup>17</sup> including this “accessible” function would have the following ramifications on the product design:

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<sup>17</sup> As a threshold matter, the FCC would be faced by a difficult question of allocating responsibility for providing access to people who are deaf between the carrier and the manufacturer, because voice to text conversion can be accomplished either: (1) through a change in the infrastructure, accompanied by some changes to the pager; or (2) exclusively through far  
(Continued ...)

- Addition of parts required to construct visual text display
- Increased size because of inclusion of text display
- Voice recognition software and/or hardware to convert voice to text software
- Additional chip capacity or memory to accommodate voice to text software
- Additional chip capacity or memory to generate visual display
- Increased size because of additional memory chips or greatly increased cost to incorporate similar size chip with increased memory capacity
- Greater power drain on the product, requiring a larger battery (resulting in an increase in size and creating the potential for greater interference),<sup>18</sup> a more expensive battery that has more power but is the same size, or a significant reduction in product use time

If Motorola were to incorporate the features required to provide access to a person who is deaf into the *Portable Answering Machine*, the end result would be a product that is bigger, more expensive, and has a shorter battery life – in short – is less desirable for all users, disabled and non-disabled alike.

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more extensive changes to each and every *Portable Answering Machine* on the market, which would have a serious impact on the product size, memory, and power drain.

<sup>18</sup> Under the proposed definition of “accessibility,” manufacturers must, to the extent “readily achievable,” avoid generating interference with hearing aids and other assistive listening devices. See Access Board Guidelines § 1193.43(h). The higher the power level and the higher the computing power that a product operates at, the more likely that it is to generate interference. As this example shows, by making the *Portable Answering Machine* accessible to a person who is deaf, Motorola might actually make it less useful to a person who is hearing-impaired, who might otherwise be able to use the product (for example at its maximum volume level) as it is currently marketed.

Most importantly, the futility – for manufacturers, consumers and the FCC – of this inquiry into the accessibility of the *Portable Answering Machine* to just one of the many functional limitations identified on the 18 point “checklist,” becomes apparent when one recognizes the existence of other paging products that optimize visual features that are accessible to people who are deaf – alpha numeric pagers. An alpha-numeric pager would provide an equivalent function (deliver a message), be smaller in size, cost less, and should be preferable for deaf persons to use as a means of accessing paging technology.

Similarly, even though alpha-numeric pagers are extremely useful to persons who are deaf or hard of hearing, Motorola, under the FCC’s proposal, would: (a) be required, as part of its design process, to determine whether it was “readily achievable” to make the product accessible to the other functional limitations identified on the 18 point accessibility “checklist;” and (b) be vulnerable to complaints by persons with other disabilities alleging that the product is not accessible to them.

The same people who are blind or have low vision, and should find the *Portable Answering Machine* pager useful, for example, could complain that alpha-numeric products are not accessible to them. Motorola, as part of its design process, and subsequently the FCC, in the context of evaluating a complaint, would need to determine whether it was “readily achievable” to include a voice chip to convert text to voice into the alpha-numeric pager. Incorporating the text to voice feature would have the same consequences, in terms of increased size, greater cost, shorter battery life and product use time, as the *Portable Answering Machine* example described above. Moreover, inclusion of features to provide access to people who are blind or visually impaired would fundamentally alter the nature of the product. Alpha-numeric pagers are designed to be worn on the belt or on the wrist (in a watch) in order to achieve “unconscious carry” by the

user. If the text to voice feature were included on the alpha-numeric pager, resulting in increased product size, the alpha-numeric pager would not be able to achieve “unconscious carry” – which is a fundamental characteristic of what the alpha-numeric pager is and what the market that purchases the product – persons with and without disabilities alike – wants. In effect, both people who are blind and people who are deaf would get a product that is less usable, less attractive and more expensive than the products that are currently offered.

To summarize the above points, it is clear that sight impaired individuals can best receive information in voice, while hearing impaired people can most easily use text. At the present time, there are technologies that send voice messages well and **different** technologies that send text well. The most efficient way to get the right message format to the consumer is to use the right technology. Converting from text to voice or vice versa in the pager is inefficient and expensive, and makes no sense when there is such an easy way to accomplish the desired result using distinct products, each incorporating one type of technology.

**2. The FCC’s proposed regulations do not promote product differentiation, but instead can lead to unintended, nonproductive results.**

Other examples demonstrate that unintended, nonproductive requirements could be imposed upon manufacturers under an individual product-by-product approach. Under the definition of “accessibility” proposed by the FCC, a manufacturer would be required to assess whether it was “readily achievable” to accomplish each of the 18 items on the access “checklist” independently.<sup>19</sup> This scheme, which forces manufacturers to assess the accessibility of inputs to a

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<sup>19</sup> Access Board Guidelines § 1193.41, § 1193.43.



particular functional limitation independently or in isolation from the accessibility of the product's outputs to the same functional limitation could lead to results that do not, in actuality, increase accessibility.

Consider for example, Motorola's *Pagewriter*<sup>TM2000</sup>.<sup>20</sup> The *Pagewriter*<sup>TM2000</sup> is a two-way paging product that permits the user to send and receive pages, email, and access the internet in text format. Because of these features, the *Pagewriter*<sup>TM2000</sup> should be extremely useful to people who are deaf or hard of hearing; the *Pagewriter*<sup>TM2000</sup> can perform many functions that would otherwise need to take place over a telephone. The *Pagewriter*<sup>TM2000</sup> looks like a pager-sized computer;<sup>21</sup> it has a screen and a keypad. Assume, for the sake of argument, that it is "readily achievable" to include a zoom feature that would increase the size of the text on the product screen so that the product "output" would be readable by a person who is visually impaired. At the same time, it is not "readily achievable" to make the keypad accessible to persons with low vision, because the buttons would need to be so much larger that it would triple the size and fundamentally alter the product. Under the FCC's proposal, which endorses the Access Board's independent assessment of whether it is ready achievable to make product inputs and product outputs accessible to the same functional limitation – Motorola would be required to incorporate the zoom feature even though a person who is blind or has low vision could not use the product because of its inaccessible inputs.

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<sup>20</sup> A product information sheet for the *Pagewriter*<sup>TM2000</sup> has been attached as Appendix B to these comments.

<sup>21</sup> Its dimensions are: 3.6" x 2.8" x 1.2".

As the *Pagewriter™2000* example demonstrates, the FCC's proposed regime would lead to nonproductive results. People with disabilities would not benefit if a manufacturer were to incorporate some access features into a product, but could not incorporate others that would make the product actually usable, useful, and desirable to people with the disability at issue. In fact, such actions would lead to consumer frustration and encourage the misperception that the manufacturer does not understand functional limitations or how people with those functional limitations interact with CPE. By adding useless features, it would make the product less attractive and more expensive without any added benefit. It would be a waste of resources and a poor result for consumers with disabilities to require a manufacturer to incorporate the "readily achievable" access feature in this example.

**3. Only a product-line approach to Section 255 implementation will be workable and result in meaningful increases in the accessibility of CPE to persons with disabilities.**

Someone may respond to this discussion by arguing that Motorola has simply identified several examples where it was not "readily achievable" to modify the individual product to provide the desired access to telecommunications. That is exactly the point. Because it is impossible, and therefore not "readily achievable" to make the particular product accessible to everyone, manufacturers' inability to make "accessible" product, as the FCC proposes to define that term, will be the rule, not the exception. As a result, it is: (1) inconsistent with Section 255's goal of increased accessibility; (2) unfair to manufacturers; (3) a waste of limited compliance resources; and (4) counterproductive to subject manufacturers to complaints about the accessibility of every product to every functional limitation.

Because of the legal and practical limitations on what manufacturers are required to do to enhance accessibility, only a product-line approach to compliance makes sense to achieve the goal of increased access to products and service for persons with disabilities. A product-line approach to compliance makes sense both in terms of enhancing the accessibility of products available to persons with disabilities, and in terms of making products that all people, disabled and non-disabled, want. The best way to meet access needs and to make desirable products is to permit product differentiation through the inclusion of access features across product lines. Why should everyone's choice of pagers be limited to a *Portable Answering Machine* with an alphanumeric display? Why shouldn't a person who is deaf or hard of hearing be able to buy the smallest alpha-numeric pager on the market, which is fully accessible to him or her and meets his or her telecommunications needs?

As these examples demonstrate, the FCC's "ideal" of "full accessibility" in a single product is not ideal at all. The trend in CPE manufacturing is to make products that are increasingly personal and customized to meet the needs of specific classes of users. To the extent "readily achievable," these classes of users include persons with disabilities.

A product-line approach to compliance, which recognizes and endorses the need for manufacturers to exercise discretion to increase accessibility across a product line, permits greater flexibility for a manufacturer to work within the limits of what is "readily achievable." A product-line approach would permit a manufacturer to include more accessibility features to accommodate a particular type of disability into selected products. For example, a manufacturer seeking to provide access to persons with partial hearing loss could include enhanced audio, a speaker jack, and a vibrating feature in certain cellular phone models, rather than provide only enhanced audio in every phone. Such an approach would be preferable to consumers – both

consumers with disabilities and non-disabled consumers, who need similar features, for example, because they work in a noisy environment. In this way, an “up front” product-line approach to compliance could result in the provision of more meaningful levels of access for particular functional limitations in a targeted group of products, rather than a very superficial level of access in virtually all products.

**C. By Making The Product Line Approach The Rule, The FCC Avoids Requiring Manufacturers to Waste Time And Money Proving Why Each Individual Product Is Not “Universally Accessible” - An Impossible Goal.**

In spite of the unanimous recognition that no one product can be accessible to everyone, under the FCC’s proposal, manufacturers would apparently be vulnerable to complaints about the accessibility for every product to every person with every disability. While recognizing that manufacturers cannot produce universally accessible products, the FCC’s proposal would permit a series of piecemeal complaints based on different functional limitations and needs that would effectively require manufacturers to defend their inability to achieve the impossible – a universally accessible product – not only once, but over and over again.

Under this regime, manufacturers who attempt to comply with Section 255 in good faith are constantly on the defensive. A manufacturer receives no safe harbor from complaints for doing what needs to be done to increase access – exercise discretion to include features that enhance access into different products where “readily achievable.” The FCC’s regulations do not recognize what the FCC concedes: that it is not feasible to make every product accessible to every disabled individual. On the other hand, if manufacturers and service providers were permitted to evaluate the accessibility features of an entire product line, the result would be

product lines which include a variety of products that are accessible or compatible with various functional limitations.

By making manufacturers vulnerable to complaints about the alleged inaccessibility of every product to every functional limitation, the FCC's proposal maximizes the number of complaints that can potentially be filed. Since a manufacturer will need to defend its product design decisions concerning what is "readily achievable" for all functional limitations for every product, the FCC's proposal similarly maximizes the amount of documentation that a conscientious manufacturer will, as a practical matter, be required to generate and to keep to defend itself.<sup>22</sup> Consequently, the FCC's proposed approach, which requires manufacturers to assess whether each of the eighteen "accessibility" criteria are "readily achievable" for each product is excessively burdensome. This FCC's proposed regime will ultimately undermine the goals of Section 255 by diverting limited resources from design and development of a variety of products that provide meaningful access for a variety of functional limitations and towards compliance documentation and defense.

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<sup>22</sup> Without question, the five day "fast-track" complaint procedure proposed by the FCC, NPRM ¶¶ 126-143 will dictate that a manufacturer create and maintain files of purely prophylactic documentation in order to respond to any complaints forwarded by the FCC in a timely manner. The "fast-track" process destroys the validity of the FCC's tentative conclusion that the proposed rules impose no information collection requirements other than designation of a point of contact. See Initial Regulatory Flexibility Act Analysis, NPRM Appendix E, at E22. As Motorola pointed out in its comments on the Access Board's NPRM, each of the eighteen "accessibility" criteria on the checklist will surface at each decision-making crossroads in the product design, development and fabrication processes. A prudent manufacturer will want to document the reasons why any action that had an impact on accessibility was taken to show that the manufacturer has done what was "readily achievable" to promote access. The FCC's tentative refusal to recognize these significant documentation costs, implicitly required by the NPRM, permits the FCC to avoid asking the question whether such documentation costs should be considered in determining what is "readily achievable," and to ignore the practical reality that the diversion of limited resources to documentation and defense will inevitably reduce the resources available to provide access.

In contrast, the product-line approach to compliance, advocated by Motorola and other manufacturers, recognizes the practical reality that no product can be accessible to all functional limitations, and reduces the amount of documentation and complaints that will be generated by Section 255 so that more resources can be directed towards the design for accessibility – the intent and spirit of Section 255. By focusing on manufacturer’s accessible outputs rather than detailed regulation of manufacturing processes, the product-line approach will increase the incentives and abilities of manufacturers to produce meaningful access for a wide range of disabilities.

**D. The ADA Not Only Supports, But Compels, The FCC To Adopt The Product-Line Approach Which Will Increase the Number of Accessible Products in the Marketplace.**

As Motorola has pointed out throughout these proceedings, the ADA – which is referred to in both the text and the legislative history of Section 255 – provides strong support for the FCC to interpret Section 255 “up front” to require each manufacturer to provide comparably priced products that are accessible for each product line offered – in other words, that provide representative access to each type of service. Under this regime, compliance would be assessed based upon the accessibility of product lines or families. The number of accessible products, and in particular, the quality or degree of accessibility would increase by implementing this approach.

The FCC has the authority to interpret Section 255 to require accessibility across product lines. The telecommunications and customer premises “equipment” referred to in the text of Section 255(b) can be interpreted as either singular or plural. To resolve this textual ambiguity, the FCC should look to the ADA; it strongly supports defining the scope of Section 255 to apply to families or groups of products. Both the courts and the government agencies

responsible for implementing the ADA have recognized that proper application of the “readily achievable” definition, will, in some circumstances, result in disabled consumers having comparable access but fewer choices than the general public.

As Motorola has repeatedly pointed out, the ADA regulations related to fixed seating in public theaters and stadiums and hotel rooms demonstrate that government agencies, as well as the courts, have recognized the reality that providing access can carry substantial costs and require significant physical modifications, so that the “readily achievable” definition does not require that every seat or room be accessible.<sup>23</sup> Consequently, disabled patrons have fewer choices than the general public. Whereas the general public can choose from any seat in the stadium or theater, disabled patrons' choices are limited to a representative sample of seats that are accessible. While a person with a disability may have fewer choices of seating locations available in a particular theater or stadium, he/she still has the choice of going to a variety of theaters or stadiums with accessible seating. So too a person with a disability, under the product-line approach, would have a representative sampling of products with accessible features from one

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<sup>23</sup> Under the guidelines promulgated by the Access Board, and adopted by the Department of Justice ("DOJ"), theater and stadium owners are not required to make every single seat wheelchair accessible. Department of Justice Standards for Accessible Design ("JDSAD"), 28 C.F.R., Part 36, App. A, § 4.33.3; 28 C.F.R. § 36.308, DOJ Preamble to Regulation on Non-Discrimination on the Basis of Disability ("DOJ Preamble"), 28 C.F.R. Part 36, App. B (commenting on § 36.308). Even as applied to new construction, which is subject to more stringent requirements than existing facilities, the ADA has been interpreted to require that: (1) a certain percentage of accessible seats be provided; (2) the accessible seats must be integrated into the seats available to the general public; and (3) the accessible seating must be dispersed throughout the stadium or arena so that disabled patrons are offered the same general range of choices, including sight lines and price, that are available to the general public. Id.; Paralyzed Veterans of America v. Ellerbe Beckett Architects & Engineers, P.C., 950 F. Supp. 393, 398-405 (D. D.C. 1996) (discussing these requirements and applying them to the MCI arena in the District of Columbia), aff'd 117 F.3d 579 (D.C. Cir. (1997), cert. denied 118 S. Ct. 1184 (1998).

manufacturer, as well as an even broader range of choices of products with different and similar access features in the marketplace as a whole.

The Access Board rejected manufacturers' position that the ADA supports a product-line approach to compliance, stating:

In drawing analogies from the ADA, the correct connection is between the telecommunications equipment and CPE and the facility, not individual elements within the facility. For example, all theaters in a multi-theater complex must be accessible so that persons with disabilities can choose which films to see, not only a few theaters with "comparable" movies . . . Disabled persons' seat choices are limited but not whether they can see movie A or movie B.<sup>24</sup>

The Access Board's reasoning, rather than disproving the product-line approach, actually supports it. Accessible CPE is not an end in itself. Rather, CPE is simply a vehicle for persons with disabilities to access a variety of telecommunications services such as wireless telephony and paging. To use the Access Board's analogy, the CPE is not the movie – the telecommunications service is. The range of CPE available in the marketplace is like the seats in the theater: each is slightly different but serves the same essential function – in the Section 255 context – accessing telecommunications service.

Therefore, contrary to the Access Board's conclusion, the ADA compels an interpretation of Section 255 that would require manufacturers to provide a representative sample of accessible products, to the extent "readily achievable," that would provide disabled consumers with the same range of basic choices as non-disabled consumers, such as telecommunications

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<sup>24</sup> 63 Fed. Reg. at 5612.



functions, quality and cost. Furthermore, this reading of Section 255 will dramatically increase the number of accessible products available in the marketplace.

**III. MOTOROLA AGREES THAT THE FCC SHOULD ADAPT THE DEFINITION OF “READILY ACHIEVABLE” TO THE TELECOMMUNICATIONS CONTEXT, SPECIFICALLY BY FOCUSING ON THE CONCEPTS OF TECHNICAL FEASIBILITY, CUMULATIVE COST OF ACCESS FEATURES, AND FUNDAMENTAL ALTERATION.**

**A. The FCC Should Adapt The Definition Of “Readily Achievable” To The Telecommunications Context.**

Motorola supports the FCC’s tentative decision to modify and adapt the ADA definition of “readily achievable,” to the unique context of telecommunications.<sup>25</sup> Under the FCC’s proposed approach, “the ADA factors should guide, but not constrain . . . development of factors that more meaningfully reflect pertinent issues related to telecommunications equipment and services.”<sup>26</sup>

**1. In order to appreciate the complexity of determining what is “readily achievable,” and to formulate appropriate regulations, the FCC should give greater consideration to the many inter-related factors that drive product design and development.**

In order to adapt the “readily achievable” standard appropriately to the telecommunications context, Motorola believes that the FCC needs a greater understanding and appreciation for the complexity of the product design and development process. The design and development of telecommunications equipment and CPE is an extraordinarily complex process

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<sup>25</sup> NPRM ¶¶ 98, 99.

<sup>26</sup> NPRM ¶ 98.

that involves consideration of inter-related factors and difficult trade-offs, all in the context of a highly competitive marketplace. Rather than discuss this process in the abstract, Motorola provides some specific information about the product design process in the hope that the FCC will develop regulations that promote the goals of Section 255 by taking into account the complexities of the product design process.

While the process of developing new products varies from manufacturer to manufacturer, the process is typically driven by management and marketing, using such tools as market research, strategic planning tools, and considerations related to the company vision or overall strategy. Normally, a product is developed with a specific customer niche as a target; i.e., the product is designed to meet the needs of a specific part of the market demographics. Each market segment is defined by the need for specific core features (function, size, and appearance); the teenage paging market, for instance, calls for a much different look and features than does the market for executives. These core features, in combination with company strategies, define the fundamental characteristics of the product being developed.

In many companies, the product development process is controlled by a product definition document called a “contract book.” This document defines the product in terms of overriding goals and sets targets to achieve those goals such as cost, size, and reliability. In addition, the product definition document sets a series of product operational and technical parameters such as features, frequency range, product registration time,<sup>27</sup> and audio quality. A

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<sup>27</sup> Product registration time is the interval between the moment that the product is activated by the user and the time that it is actually capable of performing its various functions. For example, the first time a user turns on a cellular phone or two-way pager, the device initiates a “handshake” or registration with the system switch. This can take several minutes and until completed, the system will not recognize the user’s unit.

product design team's job is to translate the product definition document into an actual product. To accomplish this, the product design team translates the product goals into "product drivers" and sets budgets for accomplishing them.

A hypothetical set of "product drivers" and budgets for CPE product, might include the following:

- cost
- battery life
- registration time
- part count<sup>28</sup>
- size
- memory (RAM, ROM)
- feature set
- audio quality

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<sup>28</sup> In manufacturing, part count has a highly significant impact on product reliability and quality. The fewer parts involved, the fewer errors that are likely to be generated in the manufacturing process. At Motorola part count has been the leading strategy for meeting Six Sigma quality in all our products. Adding parts also increases the size of the product circuit board and thus, the size of the product.

In addition to the basic part count driver there are other practical issues related to manufacturing difficulties and costs. Even an accessibility feature, like a speaker jack (which is perceived as "simple" because the components may not be very expensive and the change may not interfere with use of the product by a person who does not need that feature) may involve substantial, costly changes to the product assembly line. On an assembly line, components that are similar in size and shape can typically be incorporated into a product by the same robot. A speaker jack, for example, which is a one of a kind component, typically requires a custom placement, either manually (by a human being) or by another specially programmed robot, which can add significant assembly and product costs.

These “product drivers,” and the corresponding “budgets” established to achieve these goals, have a complex inter-relationship.

Once the product drivers are identified, the progress of the design effort is measured in terms of these budgets. For instance, the target size of the product usually determines the size of the battery that can be used, and this, with the desired battery life of the product, determine the amount of power available to support the product (current drain budget). If the current drains of product features are added-up and exceed the budget, the design will have to be changed, so that the overriding current drain goal will be met. This may involve making trade-offs, and possibly going back to management to report that a desirable feature might have to be eliminated to continue the design. In some cases, if the trade-offs compromise the ability to achieve product goals, the product may be terminated.

Motorola has developed a matrix to provide a flavor for the complex effect of the FCC’s proposed 18 point “checklist” for defining accessibility on the product drivers that govern the development process,. In this matrix, the vertical axis lists the 18 items on the accessibility “checklist”, with some possible implementation strategies under each one. The horizontal axis lists the "overriding budgets" which are derived from the product drivers. The intersection points for each of the columns and rows represents the location of an interaction between the access strategy and the respective design budget. If there is interaction, the point is marked with an "X". The matrix demonstrates that in virtually every instance, the inclusion of a single access feature would implicate not just one, but many of the product drivers.

EXAMPLES OF ACCESS FEATURES AND IMPACT ON PRODUCT DRIVERS								
A u d i o  Q u a l i t y	T i e r i n g	M e m o r y  ( R A M ,  R O M )	P a r t  C o u n t	R e g i s t r a t i o n  T i m e	B a t t e r y  L i f e	S i z e	C o s t	Prod uct Driv ers
								<b>Input, Control &amp; Mechanical Functions</b>
								<b>Operable w/o Vision</b>
x	x	x	x		x	x	x	voice chip
							x	nib on 5 key
			x			x	x	Braille key pad
								<b>Operable w/ low vision</b>
x	x	x	x		x	x	x	voice chip w/ enhanced audio
x		x	x		x	x	x	voice chip w/ speaker jack
		x				x	x	zoom w/ enhanced audio
		x				x	x	zoom w/ speaker jack
								<b>Operable w/ little or no color perception</b>
								no exclusive use of color to designate key functions
							x	enhancements to contrast on visual displays
								<b>Operable w/o hearing</b>
		x	x		x	x	x	vibrating feature
		x						visual cues
								<b>Operable w/ limited manual dexterity</b>
						x	x	big buttons
x	x	x			x		x	speaker phone
	x	x	x	x	x	x	x	voice-activated features
								<b>Operable with limited reach or strength</b>
	x	x	x	x	x	x	x	voice-activated features

EXAMPLES OF ACCESS FEATURES AND IMPACT ON PRODUCT DRIVERS								
Auditory Quality	Telexing	Memory (RAM, ROM)	Part Count	Registration Time	Battery Life	Size	Cost	Product Drivers
x	x	x			x		x	speaker phone
								Operable w/o time-dependent features
		x					x	ability to opt-out of time-dependent features
								Operable w/o speech
		x	x			x	x	text inputs
								Operable w/ limited cognitive skills
		x					x	expanded number storage/memory
								Output, Display & Control Functions
								Availability of visual information
x		x	x		x	x	x	voice chips
		x					x	incorporation of auditory cues
								Availability of visual info ... low vision users
		x	x			x	x	zoom features
								Access to moving text
		x					x	"freeze-frame" function
								Availability of Auditory Information
		x	x			x	x	text display
								Availability of auditory info... hard of hearing
x		x	x		x	x	x	enhanced audio
		x	x			x	x	text display
		x					x	visual cues
								Prevention of visually-induced seizures
		x					x	ability to deselect flashing features
								Availability of auditory cutoff

EXAMPLES OF ACCESS FEATURES AND IMPACT ON PRODUCT DRIVERS								
A u d i o  Q u a l i t y	T i e r i n g	M e m o r y  ( R A M ,  R O M )	P a r t  C o u n t	R e g i s t r a t i o n  T i m e	B a t t e r y  L i f e	S i z e	C o s t	Prod uct Driv ers
						x	x	ability to shut off volume
								Non-interference w hearing technologies
x		x	x			x	x	EME emissions do not generate interference
								Hearing Aid Coupling
x			x			x	x	all product outputs hearing aid compatible

The interaction between the access solution or feature and the budget often requires a complex design analysis and decision. The interaction may result in the following required actions:

1. If the impact of the access solution or feature on the budget is known, it must be reviewed to make sure that it does not cause an overall problem in the product meeting its target.
2. If the access solution or feature causes the budget to be exceeded, the design must be reviewed to see if other changes can be made to permit the inclusion of the feature.
3. If the access solution or feature is not technically feasible, a case must be made for why it is not, and this must be carefully documented.
4. If an access solution or feature is not known, the literature must be searched or internal technical experts must be sought to find a viable approach; this often requires lengthy investigations, including iterative design and testing.
5. If a access solution or feature is known, its effectiveness for the particular product must be tested to confirm that it works; this may require extensive testing of prototypes using actual market tests.
6. If the access solution or feature is found to be not “readily achievable” for any reason, the analysis resulting in that determination must be documented.

As can be seen in the matrix, the FCC's recommended approach requires dozens of these design exercises to take place. Typically, making a product accessible to a particular functional limitation will not be a question of “tweaking” one product feature – but many – inputs, outputs, controls, etc., further complicating this analysis. Furthermore, this matrix would be different for every product. It should be noted that rarely are the many hundreds of design decisions that take place today documented in any manner that can be retrieved. The guidelines are particularly onerous if all 18 tests are applied to every product, as is suggested in the FCC’s NPRM.

Referring again to the matrix, an example of how this might work is to look at the first item on the Access Board/FCC accessible “checklist,” “Operable without Vision.” Here the engineers listed the use of a voice chip, a nib on the “5” key, and a Braille key pad as possible



strategies for compliance. In looking at the voice chip, there are a significant number of "budget interactions" which might be considered. Adding the voice chip adds a significant number of components and software, so it affects current drain, size, component count, cost, memory, etc. Consequently each of the budgets must be evaluated to see if it can "accept" this new requirement. In the case of the voice chip, the audio quality must be tested and verified. This requires testing with human subjects, because there are no "lab tests" for audio quality. This type of exercise would then have to be repeated, for the remaining 17 items on the accessibility checklist and for each strategy which might accomplish the checklist items.<sup>29</sup>

This is an oversimplified example. However, it makes the point that the design process is a complex, interactive analysis and decision making exercise. The addition of the Access Board/FCC proposal to this process is stifling and overwhelming. It adds significant time to the design process in an industry in which design cycle-times must be continuously reduced to maintain competitiveness. The FCC's approach has added nearly 100 interactions (in this example) in the evaluation of the accessibility of the product. Some of these interactions are straightforward; most of them are very complex. The FCC proposal adds exponentially to the complexity of the design process, and the added burden of documentation and management/legal

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<sup>29</sup> The complexity of the determination of what is "readily achievable" in virtually every instance demonstrates that the FCC's position that its proposed rules do not require any documentation other than establishment of a point of contact is incorrect. See Initial Regulatory Flexibility Analysis, Appendix E to the NPRM at E22. The need for such documentation will arise not only in the context of a complaint process, but also internally. Many conscientious manufacturers will attempt to monitor compliance with Section 255 within their own organizations. Certainly, the FCC should want manufacturers to take such actions to ensure compliance without FCC involvement. The discussion above, however, should demonstrate the onerous system that the FCC will establish if it adheres to its proposed 18 point mandatory checklist for accessibility, which would require manufacturers to conduct the complicated "readily achievable" calculus described above for each of the 18 items on the checklist.

review to position the company to defend itself in the light of potential complaints is non-valued added activity. The proposed approach forces activities away from creative design, and puts the company energies into defensive documentation and internal legal reviews.

Moreover, the impact of access features upon each of the product drivers demonstrates the impact, in terms of “difficulty” and particularly, “expense” on product design and development. A determination of what is “readily achievable,” for example, in terms of cost requires consideration of not only the cost of the access feature itself, but also includes:

- the cost of any increased requirements for power or memory capacity.
- the cost of additional quality control measures caused by increased errors due to higher part count.
- opportunity costs when features that could be subject to tiering (sold for an additional fee) are sacrificed to include access features.

Similarly, a determination of whether an access feature would “fundamentally alter” the nature of the product requires consideration, for example of any increase in size caused not only by the access feature itself, but also any increase in size caused by increased requirements for power or memory capacity.<sup>30</sup>

**B. In the Telecommunications Context, The Determination Of What Is “Readily Achievable” Should Focus On Technical Feasibility, Cumulative Cost, And Fundamental Alterations Involved In Making A Product As A Whole Accessible To A Particular Functional Limitation.**

In the NPRM, the FCC proposes a three-part framework for determining whether a particular telecommunications accessibility feature is “readily achievable:”

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<sup>30</sup> A product battery, for example, occupies between 20 and 60% of the total product size.

- Is the feature feasible?
- What would the expense be of providing the feature?
- Given its expense, is the feature practical?<sup>31</sup>

In the NPRM, the FCC requested comment on these proposed factors, especially their “practical implications,” and “effect on the development and marketing of accessibility features, on the pace of innovation, and on the administrative costs associated with implementation and enforcement measures.”<sup>32</sup>

Motorola agrees with many of the concepts that underlie the FCC’s proposed three-part approach, but proposes an alternative three part framework that more accurately reflects ADA precedent and would be more efficient and effective for the FCC to implement. Motorola’s proposal would make the determination of what is “readily achievable” based upon three areas of inquiry:

- Technical feasibility
- Cost
- Fundamental alteration

Motorola believes that this proposed approach more accurately adapts the concept of what is “readily achievable” based upon the ADA analogy.

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<sup>31</sup> NPRM ¶100.

<sup>32</sup> Id.

**1. The “readily achievable” determination should focus on the actions required to make a product accessible overall to a person with a particular functional limitation.**

As a threshold matter, Motorola objects to the FCC’s proposed framework because it focuses on whether an individual access feature is “readily achievable,” instead of whether a product can be made accessible overall to a consumer with a particular functional limitation. In the *Pagewriter*<sup>TM</sup>2000 hypothetical, for example, even if it were “readily achievable” to make the product output (text on the screen) accessible to a person who is blind or visually impaired, it is unproductive to expend the cost and effort to do so because the product inputs – its keypad – will never be accessible to the visually impaired because of its size. If the FCC is truly interested in increasing the availability of accessible CPE in the marketplace, it should focus on whether it is “readily achievable” to make a product accessible overall to a particular functional limitation, not on individual access features. Any other approach is inconsistent with the FCC’s interest in implementing Section 255 in a way that is practical.<sup>33</sup>

**2. Technical feasibility, cumulative cost, and fundamental alteration should guide the determination of what is “readily achievable” and therefore be required by Section 255.**

**a) Motorola agrees with the FCC that technical feasibility should be considered.**

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<sup>33</sup> NPRM ¶ 106. The FCC’s formulation of “practicality,” however, suggests that this consideration is based upon the cost of a given access feature. *Id.* (“Perhaps the most difficult aspect of determining whether a particular accessibility feature is “readily achievable” involves determining whether it is practical, given the expense involved.”). As Motorola’s examples demonstrate, there are likely to be many situations where an accessibility feature is not practical regardless of how much it costs.

First, Motorola commends the FCC for modifying the Access Board’s guidelines so that technical feasibility is recognized as a distinct, express factor used in determining what is “readily achievable.”<sup>34</sup> Like the NPRM, Motorola’s proposal includes the concept of technical feasibility, recognized by the FCC as the practical application of “achievability” in the context of telecommunications.<sup>35</sup>

Motorola agrees with the FCC’s tentative conclusion that technical feasibility should not be reassessed after a product is introduced to market.<sup>36</sup> The FCC’s proposed rules should make it clear that because Section 255 imposes compliance obligations on the design, development, and fabrication of equipment and CPE, technical feasibility must be assessed at the time the design, development and fabrication process for a new product or a substantial upgrade for an existing product begins. As the Access Board and the TAAC recognized, the requirement that the technical feasibility of access features be reassessed every time a product is upgraded in a manner that substantially affects its functionality will ensure that accessibility features can be incorporated into products that remain popular in the marketplace for long periods of time.<sup>37</sup>

Redesigning products that have already been designed to take into account the latest technological developments should not be required under any circumstances.<sup>38</sup> Any

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<sup>34</sup> See NPRM at ¶ 102 (discussing Access Board’s decision not to recognize feasibility as a separate factor).

<sup>35</sup> NPRM ¶ 101.

<sup>36</sup> See NPRM ¶ 120.

<sup>37</sup> 36 C.F.R. § 1193.2; TAAC § 4.2.

<sup>38</sup> See id.

redesign requirement would deplete limited compliance resources, delay product time to market, and slow the pace of innovation in a rapidly changing marketplace where products quickly become obsolete. For the same reason enforcement strategies utilized by the FCC should be proactive rather than punitive, directed towards increasing the availability of accessible equipment and CPE in the marketplace going forward.

**b) Any determination of what is “readily achievable” must take into account the cumulative impact and cost of features that enhance accessibility for the same or different disabilities.**

Based upon the ADA analogy, the FCC must consider the cumulative impact and cost of access features in determining what is “readily achievable.” The Department of Justice (“DOJ”), in interpreting the ADA, determined that it is “appropriate to consider the cost of other barrier removal actions as one factor in determining whether a measure is “readily achievable.”<sup>39</sup> Nothing in the text of Section 255 supports the FCC taking a different position on the relevance of cumulative impact in interpreting the same legal standard.<sup>40</sup>

Contrary to this ADA precedent, the FCC’s proposal refuses to account for the cumulative cost and impact of incorporating multiple access features. Under the Access Board’s definitions of accessibility and compatibility, which the FCC proposes to adopt, a manufacturer

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<sup>39</sup> DOJ Preamble, 28 C.F.R. Part 36, App. B (commenting on § 36.104).

<sup>40</sup> In fact, the text of Section 255 supports Motorola’s interpretation that a manufacturer’s efforts to provide access should be evaluated in terms of the efforts taken to accommodate persons with disabilities as a group. Section 255 requires manufacturers to “design, develop, and fabricate” equipment and CPE that is “accessible to and usable by persons with disabilities, if readily achievable.” If Congress had intended an independent assessment of what was “readily achievable” for different functional limitations, rather than for persons with disabilities as a whole, it could have identified different functional limitations and indicated that the statutory obligation applied independently to each.

must perform an independent “readily achievable” calculus for each item on the “accessibility” and “compatibility” checklists.<sup>41</sup> In practice, this would mean that a manufacturer’s efforts to incorporate features to provide access to people who are blind, for example, would have no relevance in the determination of whether features to provide access to people who are deaf also had to be included in the same product. Such an approach is inconsistent with the manufacturing process, where tradeoffs, interrelated cost impacts and physical considerations must all be weighed together.

Declining to consider the cumulative costs and impact of access features is entirely at odds with the practical realities of manufacturing CPE products. As Motorola’s matrix, at page \_\_\_\_ above, demonstrates, products are defined in terms of product drivers and budgets. While inclusion of a single access feature might not “exceed” the cost budget (or the energy, size or parts budget), the inclusion of several access features, with their corresponding impact on other product drivers (like memory and battery life) could easily do so. If the “budget” is exceeded on any one of these product drivers, there is the risk that the product will no longer meet the needs of the target market segment that it was designed to serve, which could result in it being canceled before it is ever produced.

- c) **The concept of “fundamental alteration” should be modified to the telecommunications context to ensure that CPE products remain consistent with the fundamental characteristics of functionality and price required by the market they are designed to serve.**

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<sup>41</sup> See NPRM ¶ 75 (requesting comment on this proposal).

As another factor relevant to determining what is “readily achievable,” the FCC should rely upon ADA precedent to recognize that Section 255 does not require “fundamental alteration” of products so that they no longer satisfy the needs (such as function and cost) of the target market that they were designed to serve. Motorola believes that fundamental alteration should be expressly recognized because it will play a critical role in determining what is “readily achievable,” particularly for wireless CPE.

In the preamble to the ADA regulations, DOJ determined that changes that result in fundamental alterations are not “readily achievable.” DOJ reached this conclusion by drawing a comparison to the “undue burden” standard, which defines the scope of a public accommodation’s duty to provide “auxiliary aids and services” such as sign language interpreters, text telephones, and assistive listening devices.<sup>42</sup> The “undue burden” and “readily achievable” determinations depend upon the same factors; however, the “undue burden” standard requires a higher level of effort to achieve compliance than the “readily achievable” definition does.<sup>43</sup> Since the “undue burden” standard excuses actions that would fundamentally modify goods and services, DOJ

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<sup>42</sup> In addition to requiring public accommodations to remove architectural and communications barriers “that are structural in nature . . . where such removal is readily achievable,” 42 U.S.C. § 12182(b)(2)(C)(2)(A)(iv), the ADA requires public accommodations to provide auxiliary aids and services, such as sign language interpreters, unless it can “demonstrate that taking such steps would fundamentally alter the nature of the good, service, facility, privilege, advantage, or accommodation being offered or would result in an undue burden.” § 12182(b)(2)(C)(2)(A)(iii).

<sup>43</sup> Although what is “readily achievable” and what is an “undue burden” are defined in terms of the same factors, the undue burden standard is more stringent. Whereas “readily achievable” is defined to mean without much difficulty or expense,” (emphasis added), “undue burden means “significant difficulty or expense.” 28 C.F.R. § 36.104 (regulations defining “readily achievable” and “undue burden”); see also 28 C.F.R. Part 36, App. B (commenting on relationship of two standards).



concluded that the "readily achievable" definition would excuse such actions as well, even though this is not specifically stated in the regulations.<sup>44</sup>

The Access Board, in its guidelines, recognized that the concept of fundamental alteration was useful and appropriate in identifying those instances where accessibility is not "readily achievable."<sup>45</sup> The Access Board acknowledged that under the "readily achievable" standard, "fundamental alteration" of products to provide access is not required.<sup>46</sup> Although the FCC's proposal alludes to the fundamental alteration concept,<sup>47</sup> the FCC does not expressly recognize it. Motorola recommends that the FCC expressly recognize the fundamental alteration concept.

In Motorola's view, the concept of fundamental alteration should be applied in the telecommunications context to identify the fundamental characteristics of a product that it is not "readily achievable" to change, including core features and price desired by the target market (the "product drivers discussed above"). Motorola's proposal is grounded upon the practical reality that CPE is not designed, developed or fabricated in the abstract, but for a specific market

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<sup>44</sup> See 28 C.F.R. Part 36, App. B (commenting on relationship of two standards).

<sup>45</sup> Because the "readily achievable" standard is less stringent than the undue burden standard, from which the fundamental alteration concept is derived, a manufacturer should not be required to prove that a fundamental alteration would result from a proposed product modification in order to show that it was not "readily achievable" to modify the product as proposed. Even if a manufacturer cannot reach the "fundamental alteration" threshold, the FCC should consider the impact of a proposed modification to provide access on the product's marketability in determining whether the modification is "readily achievable."

<sup>46</sup> Appendix to 36 C.F.R. Part 1193 (comment 3 on the definition of "readily achievable," § 1193.3).

<sup>47</sup> See NPRM ¶¶ 104, 106, 113, 114.

segment that wants certain core features and is willing to pay a fairly inelastic price, driven by competitive offerings.<sup>48</sup> Just as doubling the size of a small wireless handset to include large buttons would fundamentally alter the nature of the product, which depends upon its compactness and portability for its popularity, so too, the inclusion of accessibility features that increase the price of the product so that the target market is less willing to buy it fundamentally alter the nature of that product by making it unsuitable for its target market. For the same reason, manufacturers should not be required to eliminate key product features in order to incorporate accessibility features, because the omission of those market-driven features would similarly render the product unsuitable for its target market.

Motorola's proposal would not relieve manufacturers of all obligations to include accessibility features into their products. Given the discretion to incorporate access features to accommodate different disabilities across the range of products in a product line, manufacturers will often be able to incorporate features that enhance accessibility without increasing the product price or changing its size beyond what the target market will bear. This approach will promote increased access.

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<sup>48</sup> Any market segment includes individuals with disabilities.

**IV. MOTOROLA’S PROPOSED DEFINITIONS OF KEY STATUTORY TERMS, INCLUDING “ACCESSIBLE” AND “COMPATIBLE” WILL PROMOTE INCREASED ACCESS FOR PERSONS WITH DISABILITIES.**

**A. Motorola Endorses TIA’s Proposed Definition Of “Accessible,” Which Would Maximize The Accessibility Information Made Available To Consumers And Minimize The Amount Of Resources Diverted To Documentation.**

As a CPE and telecommunications equipment manufacturer, Motorola wants satisfied customers – disabled and non-disabled alike. In order to achieve the goal of customer satisfaction, Motorola seeks to provide all customers with the products that meet their specific needs.

With respect to the definition of “accessible,” Motorola believes that the FCC should adopt an approach that facilitates and encourages, rather than hinders, manufacturers in providing information about product accessibility features to persons with disabilities. Such an approach would maximize the ability of persons with disabilities to purchase products that accommodate their unique functional limitations. The FCC’s proposed definition, which is modeled on the idea of “universal accessibility,” sets a bar that is impossible for manufacturers to meet. While the FCC’s proposed definition does not preclude manufacturers from providing information about product features that enhance accessibility, by setting an impossible standard, it leaves manufacturers reluctant, rather than eager, to promote their accomplishments in providing increased access. A definition of “accessible” that is consistent with the realities of what can be accomplished within the “readily achievable” standard will encourage manufacturers to provide information about access features to consumers.

**1. TIA has proposed an alternative definition of “accessible.”**

In its comments, TIA has proposed a definition of “accessible.” TIA’s proposed definition would provide as follows:

**“Accessible:”** Telecommunications equipment and CPE is “accessible” to the extent that it enhances the ability of a person with a disability to use the telecommunications equipment or CPE by incorporating one or more of the following features or functionalities, to the extent readily achievable:

**Input, control, and mechanical functions.** Input, control, and mechanical functions shall be locatable, identifiable, and operable in accordance with each of the following, assessed independently:

- (a) **OPERABLE WITHOUT VISION.** Provide at least one mode that does not require user vision.
- (b) **OPERABLE WITH LOW VISION AND LIMITED OR NO HEARING.** Provide at least one mode that permits operation by users with visual acuity between 20/70 and 20/200, without relying on audio output.
- (c) **OPERABLE WITH LITTLE OR NO COLOR PERCEPTION.** Provide at least one mode that does not require user color perception.
- (d) **OPERABLE WITHOUT HEARING.** Provide at least one mode that does not require user auditory perception.
- (e) **OPERABLE WITH LIMITED MANUAL DEXTERITY.** Provide at least one mode that does not require user fine motor control or simultaneous actions.
- (f) **OPERABLE WITH LIMITED REACH AND STRENGTH.** Provide at least one mode that is operable with user limited reach and strength.
- (g) **OPERABLE WITHOUT TIME-DEPENDENT CONTROLS.** Provide at least one mode that does not require a response time. Alternatively, a response time may be required if it can be by-passed or adjusted by the user over a wide range.
- (h) **OPERABLE WITHOUT SPEECH.** Provide at least one mode that does not require user speech.

(i) **OPERABLE WITH LIMITED COGNITIVE SKILLS.** Provide at least one mode that minimizes the cognitive, memory, language, and learning skills required of the user.

**Output, display, and control functions.** All information necessary to operate and use the product, including but not limited to, text, static or dynamic images, icons, labels, sounds, or incidental operating cues, shall comply with each of the following, assessed independently:

(a) **AVAILABILITY OF VISUAL INFORMATION.** Provide visual information through at least one mode in auditory form.

(b) **AVAILABILITY OF VISUAL INFORMATION FOR LOW VISION USERS.** Provide visual information through at least one mode to users with visual acuity between 20/70 and 20/200 without relying on audio.

(c) **ACCESS TO MOVING TEXT.** Provide moving text in at least one static presentation mode at the option of the user.

(d) **AVAILABILITY OF AUDITORY INFORMATION.** Provide auditory information through at least one mode in visual form and, where appropriate, in tactile form.

(e) **AVAILABILITY OF AUDITORY INFORMATION FOR PEOPLE WHO ARE HARD OF HEARING.** Provide audio or acoustic information, including any auditory feedback tones that are important for the use of the product, through at least one mode in enhanced auditory fashion (i.e., increased amplification, increased signal-to-noise ratio, or combination). For transmitted voice signals, provide a gain adjustable up to a minimum of 20 dB. For incremental volume control, provide at least one intermediate step of 12 dB of gain.

(f) **PREVENTION OF VISUALLY-INDUCED SEIZURES.** Visual displays and indicators shall minimize visual flicker that might induce seizures in people with photosensitive epilepsy.

(g) **AVAILABILITY OF AUDIO CUTOFF.** Where a product delivers audio output through an external speaker, provide an industry standard connector for headphones or personal listening devices (e.g. phone-like handset or earcup) which cuts off the speaker(s) when used.

(h) **NON-INTERFERENCE WITH HEARING TECHNOLOGIES.** Reduce interference to hearing technologies (including hearing aids, cochlear implants, and assistive listening devices) to the lowest possible level that allows a user to utilize the product.

(i) HEARING AID COUPLING. Where a product delivers output by an audio transducer which is normally held up to the ear, provide a means for effective wireless coupling to hearing aids.

Furthermore, the evaluation of a product's accessibility shall take into account accessibility of information, documentation and training, as well as information pass through, as set forth in the Access Board's Guidelines, §§ 1193.33 and 1193.37

Under TIA's proposed definition, "accessible" equipment and CPE are defined in terms of features that enhance accessibility according to the criteria developed by the Access Board, instead of using those criteria to define "accessibility" itself.<sup>49</sup> In this way, TIA's proposed definition serves to identify those product features that enhance the accessibility of products for persons with disabilities.

Furthermore, Motorola endorses TIA's proposal because it is consistent with both the limitations of the "readily achievable" standard and the reality that every product cannot be accessible to everyone. Under TIA's definition, each item on the Access Board's checklist would not be mandatory. Rather, a manufacturer would be required to do what was "readily achievable," a determination based upon, among other "readily achievable" criteria (such as technical feasibility and fundamental alteration), the cumulative cost of accessibility features (defined by the Access Board's guidelines) included in a product.<sup>50</sup> This approach is also more consistent with a policy of promoting product differentiation so as to provide truly meaningful

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<sup>49</sup> NPRM ¶¶ 74-75; Access Board Guidelines §§ 1193.41, 1193.43.

<sup>50</sup> In so doing, TIA's definition of "accessible" would apply the "readily achievable" standard in the same way as that term has been applied and defined in the ADA context. See DOJ Preamble, 28 C.F.R. Part 36, App. B (commenting on § 36.104) (indicating that it is "appropriate to consider the cost of other barrier removal actions as one factor in determining whether a measure is readily achievable.").

access for different disabilities, rather than a very superficial level of access in virtually every product.

2. **Motorola endorses the alternative definition of “accessible” proposed by TIA because it creates a workable framework that generates incentives for manufacturers to provide useful information about accessibility features to consumers, and recognizes that such features will be incorporated, to the extent “readily achievable,” across product lines and families, and provides useful product information for consumers.**

Most importantly, TIA’s proposal, unlike the FCC’s, encourages manufacturers to provide consumers with specific, technical information about the accessibility features included in products. Manufacturers cannot represent that their products are “accessible” as the FCC proposes to define that term, because no product can accommodate all of the functional limitations identified in the 18 point definition of “accessible.” While a manufacturer could certainly qualify such a representation by stating that a product has been made accessible to the extent “readily achievable,” this kind of representation is absolutely useless to a consumer with a functional limitation, because such a statement provides no information about what a product does and whether it will in fact be accessible to that consumer. Similarly, the uniqueness of every individual’s disability, and the range of functional limitation even within a single disability, will inhibit manufacturers from representing that a product is “accessible” to a particular type or set of functional limitation.

In contrast, under TIA’s proposal, manufacturers’ success in providing access is measured in terms of the features provided, which will encourage manufacturers to make representations about specific features that enhance accessibility included in a given product, information that a consumer with a disability needs in order to determine whether a given product will be accessible to him or her. A manufacturer can provide, for example, information

concerning how many decibels of gain a product can produce, the font size, typeface and color used on a display, the size of buttons on a keypad, or whether the product has a voice chip or a vibrating feature. These are features that enhance the accessibility of products that can be described in specific technical terms that are useful to persons with disabilities, who most often are well informed about the performance criteria that a product must meet in order to be accessible to their unique functional limitations.

By ensuring that persons with disabilities and other consumers have the information to determine whether a product is accessible to them, TIA's proposed definition of "accessible" would reduce the amount of manufacturer resources that are diverted to demonstrating compliance, and at the same time, encourage increased accessibility.

**B. The Definition Of Compatibility Should Be Modified So That It Not Only Accounts For, But Encourages, Advances In Technology That Will Ultimately Increase Access For Persons With Disabilities.**

Where accessibility is not "readily achievable," manufacturers have an obligation under Section 255 to ensure that their telecommunications equipment and CPE are "compatible with existing peripheral devices or specialized customer premises equipment commonly used by persons with disabilities . . . if readily achievable." In the NPRM, the FCC "recognize[s] that . . . compatibility criteria need to be broadened to account for likely technological advances in both telecommunications and accessibility products."<sup>51</sup> Motorola agrees.

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<sup>51</sup> NPRM ¶ 92.



The FCC proposes to adopt the same definition of “compatibility” developed by the Access Board in its guidelines.<sup>52</sup> That definition relies upon a five item “checklist” to define compatibility. Two of the five elements of the FCC’s proposed compatibility checklist relate to TTY compatibility.<sup>53</sup> To date, this compatibility has proven extremely difficult for digital wireless technology.<sup>54</sup> Therefore, for many digital products TTY compatibility will not be “readily achievable” because it is not technically feasible.

As the FCC has recognized in other proceedings, digital wireless technologies are the wave of the future and will benefit all of the public, including persons with disabilities. Digital technology has made two-way paging and mobile email access possible – features that are extremely useful, for example, to persons who are deaf or hard of hearing. Digital technology also made the new NBPCS voice paging possible – a communication approach which is very useful for someone who is blind. Digital technology greatly increases the capacity of telephone systems to serve more users with more functions. If Section 255 had been in effect when digital technology was first being developed, a requirement that any telecommunications equipment using this infrastructure be TTY compatible might have significantly impeded development of this technology which has benefited everyone. In balancing the public interest objectives of encouraging technological innovation and increased usability by all members of the public body,

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<sup>52</sup> See 36 C.F.R. § 1193.51.

<sup>53</sup> NPRM ¶ 91.

<sup>54</sup> Invented in the 1960s (using much older technology as a platform), TTY machines encounter numerous compatibility problems with modern computer and information technology. TTYs have not changed significantly since they were first designed. The modulation speed for example, of most TTYs is simply too slow to be effectively handled by today’s high-speed computer modems.

the FCC should ensure that Section 255's compatibility requirement is not applied in a way that impedes the introduction of new innovations in technology.

The FCC's recent activity related to digital television broadcasting provides a useful example of how compatibility criteria should be applied to new and developing technologies.<sup>55</sup> The FCC, to promote digital television broadcasting, has established a phase-in timetable for use of this technology.<sup>56</sup> In a thoroughly vetted public process, the FCC established a phase-in timetable for use of this technology to promote digital television broadcasting. Ultimately, the FCC's decision will require virtually every household in America to purchase a new television set, because existing sets will be incompatible with the new digital technology.

For the same reason, the FCC should not encourage perpetuation of outdated TTY technology by requiring compatibility indefinitely. Rather, the FCC should consider phasing out the compatibility obligation for such outdated technologies, and should encourage the development of modern replacement technology. This is a sensitive and difficult issue. Much careful thought needs to be given to any phase out and phase in of comparable technologies. The key point here is that the FCC does no service in the long run to persons with hearing or speech disabilities who rely on TTYs today by perpetuating its use.

The FCC should modify the "commonly used" criterion<sup>57</sup> so that manufacturers may be relieved of the obligation to provide compatibility with one kind of SCPE (e.g., TTY) that

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<sup>55</sup> See 63 Fed. Reg. 15774 (1998) (to be codified at 47 C.F.R. pt. 73) (setting target date of 2006 for completion of the transition to digital television).

<sup>56</sup> Id.

<sup>57</sup> See NPRM ¶ 90 (requesting comment on when SCPE should be considered "commonly used," triggering the Section 255 compatibility obligation).

is not consistent with a new telecommunications technology (e.g. digital wireless), where another kind of telecommunications equipment, CPE or SCPE that is consistent with the new telecommunications technology can be designed to provide the same telecommunications functions. In order to promote the technologies that will ultimately increase access, the FCC should not simply look at which kinds of SCPE are subsidized by state and local governments today,<sup>58</sup> but should create incentives, through its compatibility criteria, for the use and development of SCPE that is consistent with new telecommunications technologies.<sup>59</sup>

Finally, Motorola asks the FCC to clarify several aspects of the compatibility requirement. First, if the FCC were to adopt the product line approach for accessibility as advocated by Motorola, the compatibility requirement would not come into play at all, so long as a manufacturer can demonstrate it has an accessible product in its product line that serves the particular individual's functional limitation. This is clearly supported by the language of Section 255, which requires compatibility only when accessibility is not readily achievable.<sup>60</sup> Second, Motorola asks the FCC to clarify that a product line approach also is applicable to all five elements of the compatibility requirement. That would mean that manufacturers of telecommunications equipment and CPE would be required to consider incorporating the five elements across product lines, rather than a product by product basis. Motorola believes the

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<sup>58</sup> See id. (suggesting such a criterion for "commonly used").

<sup>59</sup> Motorola supports the concept of a definitive list of "commonly used" SCPE and peripherals developed and periodically updated by the FCC so that manufacturers' compatibility obligation is clearly defined.

<sup>60</sup> 47 U.S.C. § 255(d).

compelling reasons for adopting a product line approach with respect to accessibility apply with equal force to the compatibility requirement.<sup>61</sup>

**V. THE FCC SHOULD ADOPT A FAIR AND EFFICIENT COMPLAINT PROCESS THAT FOCUSES ON THE ACCESS NEEDS OF SPECIFIC INDIVIDUALS AND PROTECTS THE CONFIDENTIALITY OF PROPRIETARY INFORMATION SUBMITTED IN THE COMPLAINT PROCESS.**

**A. Motorola Endorses TIA's Comments Related To The Complaint Process.**

In response to this NPRM, TIA has submitted extensive comments related to the complaint process proposed by the FCC. Rather than reiterate TIA's comments here, Motorola indicates its strong support for TIA's comments, particularly its criticisms of the fast-track complaint process, which would permit consumers to file "complaints" with the FCC without first being required to contact the manufacturer of the allegedly inaccessible product. On two issues of special importance, however, Motorola submits its own comments in addition to those of TIA: (1) the need for a standing requirement; and (2) the need for measures to insure the confidentiality of proprietary information submitted in the complaint process.

**B. A Standing Requirement For Filing A Complaint Is Essential.**

First, and most importantly, Motorola urges the FCC to adopt a standing requirement for filing a complaint.<sup>62</sup> Congress did not, in the Telecommunications Act of 1996, indicate that a standing requirement was unnecessary. Case law suggests that while Congress has the authority to dispense with a standing requirement in the context of administrative agencies, in

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<sup>61</sup> See Section II, *supra*.

<sup>62</sup> See NPRM ¶ 148.

the absence of a clear directive from Congress, agencies are constrained from doing so by the Administrative Procedure Act (“APA”).<sup>63</sup> Absent a more broad grant of standing by Congress, the persons who are permitted to file complaints before administrative agencies should be limited to “interested parties.”

Standing should be limited to “interested parties.” To determine whether a complainant is an “interested party” entitled to standing, an agency should consider the following factors: (1) the nature of the interest asserted by the potential participant; (2) the relevance of this interest to the goals and purposes of the agency; (3) the qualifications of the potential participant to represent this interest; (4) whether other persons could be expected to represent adequately this interest; and (5) whether special considerations indicate that an award of standing would not be in the public interest.<sup>64</sup>

Consideration of these factors in the Section 255 context suggests that standing should be limited to “interested parties,” defined to mean: (1) a person with a disability, or someone filing a complaint on behalf of a specific, identifiable individual with a disability (such as an organization that represents persons with disabilities,<sup>65</sup> or a parent or legal guardian); and (2)

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<sup>63</sup> See Ecee, Inc. v. Federal Energy Regulatory Commission, 645 F.2d 339, 350 (5<sup>th</sup> Cir. 1981) (holding that § 555(b) of the APA, which states that an “interested person” may appear before an agency in connection with an agency function, applied to limit standing before FERC). But see Block v. Securities and Exchange Commission, 50 F.3d 1078, 1085 (D.C. Cir. 1995) (on issue of whether an “interested person” could compel discretionary agency action, holding § 555(b) only applies to intervention in ongoing proceedings).

<sup>64</sup> See Koniag Inc. v. Andrus, 580 F.2d 601, 616 (D. C. Cir. 1978) (Bazelon, J. concurring).

<sup>65</sup> Where an organization files a complaint, it should be required to identify specific members who access needs allegedly are not met by specific products, in accordance with the ordinary rules governing organizational standing. E.g., Sierra Club v. Morton, 405 U.S. 727, 735 (1972) (holding that alleged injury to ideological interests of organization are not sufficient to

(Continued ...)

who has purchased or used or has attempted to purchase or use a specific, identifiable piece of telecommunications equipment or CPE.

Such a standing requirement would ensure that: (1) the nature of the interest asserted by the complainant would be increased accessibility, rather than competitive or economic interests; (2) the complainant's interest would be relevant to the goals and purposes of Section 255; and (3) the complainant, as a person asserting specific, identifiable access needs would be qualified to represent this interest, because access issues cannot be resolved in the abstract.<sup>66</sup>

A standing requirement is particularly necessary in the context of Section 255 because the functional limitations of persons with disabilities, even within a single disability, are highly individual and unique. As a result, it is simply too difficult and vague for manufacturers to consider the "accessibility" of equipment or CPE in the abstract. Rather, the FCC can only provide meaningful review of accessibility when confronted with a person with specific functional limitations and accessibility needs who wants to use a particular product.

The lack of a standing requirement also opens up manufacturers and service providers to a wide variety of complaints, some frivolous, and some that do not aim to achieve greater accessibility. These complaints will necessarily divert attention and resources from bona fide complaints from consumers. Motorola is particularly concerned that entities may use the complaint process to obtain proprietary and confidential information from manufacturers and service providers.

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confer standing; organization must allege injury to specific members of organization who would have standing to sue on their own behalf).

<sup>66</sup> See Koniag, Inc., 580 F.2d at 616.

Motorola therefore urges the FCC to adopt a baseline standing requirement that the complainant must be: (1) a person with a disability, or someone filing a complaint on behalf of a specific, identifiable individual with a disability (such as a parent or legal guardian or representative organization that meets the legal standing requirements); and (2) who has purchased or used or has attempted to purchase or use a specific, identifiable piece of telecommunications equipment or CPE.

**C. In Fairness, The FCC Must Recognize And Accommodate Manufacturers' Legitimate Concerns About The Confidentiality Of Information Disclosed In The Complaint Process.**

Manufacturers and service providers have great concerns about confidentiality of information provided as part of the complaint process, as noted by the FCC in the NPRM.<sup>67</sup> In order to defend complaints, especially complaints in which the “readily achievable” defense has been invoked, manufacturers and service providers may have to provide proprietary and confidential information concerning their decisions whether to incorporate particular features into particular products or services. As Motorola’s discussion of hypothetical “product drivers” and budgets<sup>68</sup> demonstrates, much of the information relevant to such a defense – such as product memory and cost information – is likely to be highly confidential for competitive reasons. Particularly in light of the lack of a standing requirement in the FCC’s proposal, manufacturers and service providers may be required to provide this information to a wide variety of entities, including potential competitors.

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<sup>67</sup> See NPRM ¶ 153.

<sup>68</sup> See discussion of “readily achievable” standards, Section III infra.

The FCC requested comment on ways to protect the confidentiality of information provided during the complaint process, referencing confidentiality protections provided in its regulations in connection with FOIA requests and discovery. See 47 C.F.R. §§ 0.457(d), 0.457(g) and 1.731. Section 1.731 limits disclosure of information obtained through discovery, that is designated proprietary, to particular persons for use only in the complaint proceedings, and only to the extent necessary to assist in prosecution or defense of such complaint.

However, § 1.731 places the burden of proof on the party designating documents as proprietary to prove they are such if challenged. Motorola believes that disputes over the proprietary nature of information submitted as part of the complaint process will divert resources from the goals of Section 255. Motorola therefore requests that where the “readily achievable” defense has been invoked, all information submitted by the manufacturer should be treated as proprietary without a requirement that the manufacturer designate it as such. This treatment of all information as proprietary will in no way limit complainants’ ability to prosecute their claims; on the other hand, it will provide significant protection for manufacturers and service providers.

In addition, Motorola believes that the FCC should adopt strict penalties for improper disclosure of confidential information disclosed in the complaint process. Such penalties might include:

- imposition of fines;
- dismissal of the complaint; and
- precluding the complainant from filing complaints in the future.



## **VI. CONCLUSION**

For the reasons stated above, the FCC should: (1) adopt a product-line approach to compliance that encourages product differentiation to provide access to persons with disabilities; (2) define what is “readily achievable” in the telecommunications manufacturing context in terms of technical feasibility, cumulative cost, and fundamental alteration; (3) modify its proposed definitions of key statutory terms such as “accessible” (by adopting TIA’s proposed definition) and “compatible” (by creating incentives for the development of new access technologies) to promote increased access in the long-run and to minimize the need for filing complaints; and (4) adopt a fair and efficient complaint process that: (a) includes a standing requirement in order to focus on the specific access needs of a particular individual and particular allegedly inaccessible product(s); and (b) protects manufacturers against disclosure of confidential and proprietary information.

Respectfully Submitted,

**MOTOROLA, INC.**

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Dated: June 30, 1998

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## **CERTIFICATE OF SERVICE**

I, Karen E. Lloyd, do hereby certify that on this 30th day of June 1998, a copy of the foregoing Comments of Motorola, Inc. has been served, via hand delivery, upon the following:

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Disabilities Task Force  
Federal Communications Commission  
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Room 910  
Washington, D.C. 20036

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Wireless Bureau Chief  
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Karen Lloyd



**MOTOROLA**

## THE PORTABLE ANSWERING MACHINE

"Motorola's Portable Answering Machine

*Fits Neatly in Your Pocket. "*

### AN ANSWERING MACHINE IN YOUR POCKET?

#### Why Not?

Motorola's Portable Answering Machine is a revolutionary new product that receives and stores voice messages in the caller's actual voice. This simple product allows you to hear the voice of your friends, family members and business associates at the touch of a button. The person leaving you the message simply dials your personal number and speaks into the phone. The message is sent directly to this product...just like using a traditional answering machine, but it is portable! It can be worn on a belt or carried in a pocket or purse. Based on consumer feedback, another interesting way to use this product is to call forward your home or business phone to your portable answering machine. Now all of your messages are sent to one convenient location and it is all transparent to the person calling you. The caller will hear your personal greeting and then simply leave the message...it is that simple!

#### FEATURES

- Allows you to play, reverse, fast-forward, pause, lock and delete messages
- Stores between 3-4 minutes of messages on the product
- Unlimited message storage in the paging system
- Automatically forwards stored messages
- Confirmed message delivery
- Ten user-selectable volume settings
- 4 alert modes including: audible, vibrate, silent and autoplay
- 2 digit LCD message count display
- 6 weeks of battery life
- InFLEXion™ Technology — Motorola's advanced voice and data protocol

VOICE ON THE GO!

Visit Motorola on the World Wide Web at [motorola.com/pagers](http://motorola.com/pagers)

# PORTABLE ANSWERING MACHINE SPECIFICATIONS

Code Format:	InFLEXion™
Power Supply:	9V alkaline battery
Battery Life (3 pages/day):	1000 hours typical

Frequency Bands:	929-932 MHz, 935-941 MHz
Channel Spacing:	50 kHz
Number of Subchannels:	3 for control, 7 for voice
Subchannel Spacing:	25 kHz for control, 6.25 kHz for voice
Frequency Stability:	0.03 ppm with AFC
Gaussian Sensitivity (voice):	20µ V/m, best position
EIA Spurious and image Rejection:	50 dBc
EIA Intermodulation Rejection:	50 dB at 12.5 kHz
EIA Selectivity:	50 dB at 12.5 kHz

## TRANSMITTER

Frequency Bands:	896-902 MHz
Channel Spacing:	12.5 kHz
Bit Rates:	800, 1600, 6400, 9600 bps
Signaling:	4-level FSK
Frequency Deviation:	+/- 800 Hz and +/- 2400 Hz
Emissions:	Meets FCC Narrowband PCS specs
Transmit EIRP:	0.1 W
Frequency Stability:	1 ppm

## AUDIO

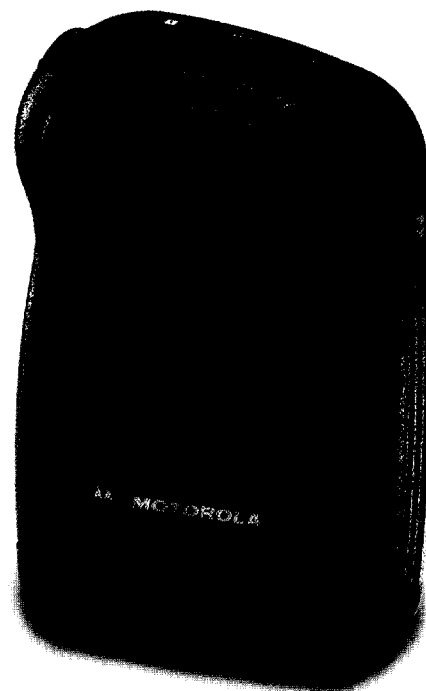
Audio Loudness:	72 dBA SPL at 12 inches at 3.2 kHz
Frequency Response:	400-2800 Hz ± 10 dB
Harmonic Distortion:	1% typical

## MECHANICAL

Volume:	7.5 cubic inches (123 cc)
Dimensions:	3.6 x 2.5 x 1.0 inches (91 x 63 x 25 mm)
Weight with Battery:	5.5 oz (156 g)

## ENVIRONMENTAL

Operating Temperature:	- 10 to +50 degrees C
Operating Humidity:	90% R.H. @ 40 degrees C



INNOVATIONS

The Portable Answering Machine was selected as the 1996 Design & Engineering Award winner by the Consumer Electronics Manufacturing Association



**MOTOROLA**

*What you never thought possible.™*

Visit Motorola on the world wide web at [motorola.com/pagers](http://motorola.com/pagers)

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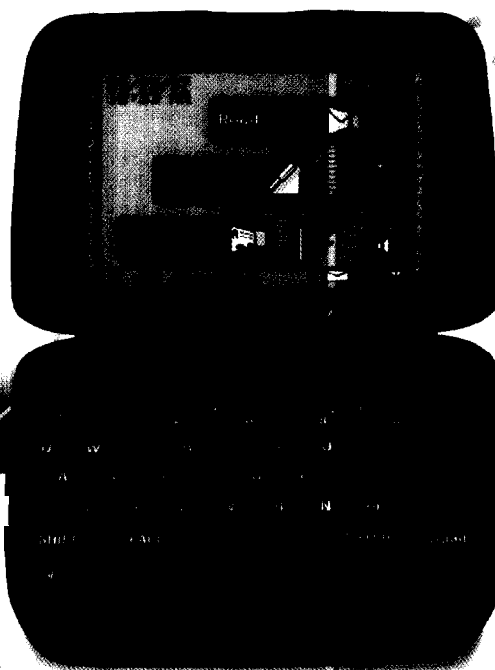


# MOTOROLA

## PageWriter™ 2000

**TWO-WAY, WIRELESS COMMUNICATIONS  
IN A POWERFUL, PORTABLE PACKAGE.**

The PageWriter™ 2000 two-way pager features a Full keyboard and graphic display that allows you to communicate wirelessly with other one- and two-way pagers, fax machines and Internet e-mail addresses, yet is small enough to comfortably wear on your belt or in your pocket.



### FEATURES

- Create your own messages and reply with custom or preprogrammed replies
- Easy-to-use graphical user interface  
Instantly send and receive your messages using a familiar keyboard design preferred by user:
- High resolution graphics display with EL backlighting
- NavDisc™ cursor control with dual select keys - Perfect for right or left handed usage
- Message Manager For reading, writing and organizing your messages
- Address Book Store names, phone numbers, e-mail addresses and other information about frequently contacted people
- FLEX™ Operating System and Software - Easy to upgrade with new features and applications right from your PC or Mac, protecting your investment
- Customizable Features Variety of alerts, filters for automatic message handling, multiple folders for saving messages, selectable font sizes, and more!
- Confirmed Message Delivery - Allows the paging system to track and confirm delivery of your pages giving you and the sender assurance that your messages are received
- Operates on rechargeable NiMH battery giving you over one week of uninterrupted usage; fully recharges in one hour
- Holster, battery and charger included; optional docking station allows for easy connectivity to PCs and Macs

Visit our world wide website at <http://www.motorola.com/PageWriter>

# PAGewriter™ 2000 SPECIFICATIONS

## GENERAL

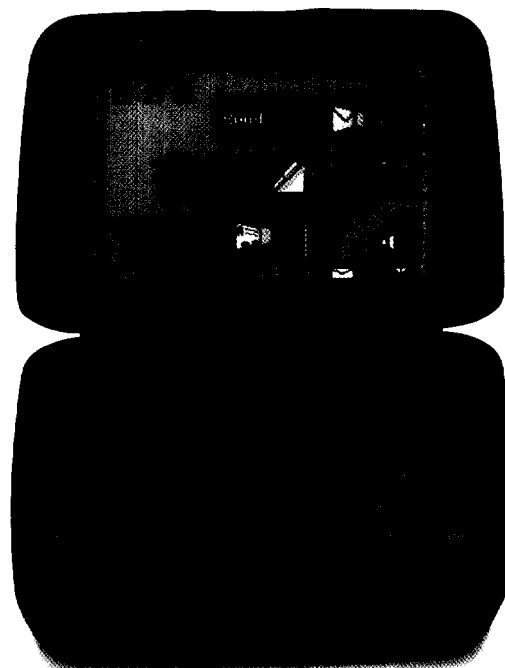
Code Format	ReFLEX
Operating System	FLEX Operating System
Memory:	1 MB Flash + 256 KB RAM = 1.25 MB
Communications Port:	Infrared
Power Supply	NiMH rechargeable battery
Recharge Time:	1 hour (charger included)
Battery Life:	Over 1 week
Keyboard:	QWERTY layout with special function keys
Keys	Total of 47 keys plus the NavDisc™ and select keys

## MECHANICAL

Dimensions:	3.75 x 2.85 x 1.2 inches (95 x 72 x 30 mm)
Volume:	9.3 cubic inches (153 cc)
Weight (with battery):	6.7 ounces (190 grams)
Graphics Display:	16 lines x 30 characters 240 x 160 pixels 4-level gray scale EL backlighting
Actual Message Area:	9 lines x 27 characters

Frequency Bands:	940 -941 MHz
Channel Spacing:	50 kHz
Bit Rate:	6400
Signaling:	d-level FSK
Frequency Deviation:	+/- 800 Hz and +/- 2400 Hz
Paging Sensitivity:	-14 µV/M best position
Image Rejection:	40 dBc
Spurious Rejection:	50 dBc
Selectivity:	60 dBc
Temperature Spec.:	0 to +50 C operating -10 to +65 C storage
Spurious Emissions:	Meets Narrowband PCS FCC specs
1 MHz Blocking:	80 dB

Frequency Bands:	901-902 MHz
Transmit Power:	1 watt
Bit Rate:	9600
Channel Spacing:	12.5 kHz
Signaling:	4-level FSK
Frequency Deviation:	+/- 800 Hz and +/- 2400 Hz
Emissions:	Meets Narrowband PCS FCC specs
Frequency Stability:	1 PPM
Transmit EIRP:	10 dB W
Power Into Antenna:	1 W



**MOTOROLA**

What you never thought possible.™